

FACE INVESTIGATION

SUBJECT: Welder was electrocuted while attempting to connect two power cords

SUMMARY:

A 38 year old male welder was electrocuted while in the process of connecting two power cords (440 volts). The victim was working over his shift and was connecting an extension cord into the plug on a roller metal bending machine when he received an electrical shock which knocked him unconscious to the floor. The victim was standing on a dry surface. Both female and male plugs which the victim was attempting to couple were defective. The energized extension cord used was not normally coupled with this machine. The housing for the plugs was metal. One of the defective plugs had been reported by a another worker 1-2 hours before the incident. Company representatives indicated that the foreman had not been notified of the defective equipment. The report of the defect came in at the change of shifts. Despite emergency care and transport by the EMT's to an area hospital the worker was pronounced dead within an hour of the incident. The Wisconsin FACE investigator concluded that, in order to prevent similar occurrences, the following issues should be addressed:

! Conduct a jobsite survey to identify potential hazards before beginning any job. Remove from service defective equipment. Lock and tag out equipment according to OSHA lockout and tagout requirements.

! Train workers to recognize safety hazards in their workplace that pertain to their job assignments. In this instance, electrical hazard recognition.

INTRODUCTION:

On September 15, 1992, a 38 year old male welder was electrocuted when he coupled two defective plugs, a twist lock male plug attached to a roll machine with a twist lock female receptacle on an energized extension cord. The Wisconsin FACE investigator was notified on September 17, 1992 by the Department of Industry Labor and Human Relations. A site visit was made January 13, 1993. Safety personnel were interviewed and photographs were taken. A death certificate, police report, WC report, OSHA report and coroner's report were obtained.

The company has been in business for 53 years, 30 years at the present site. There are 150 employees, 45 with occupations similar to the victim.

The company employed a safety officer who devotes up to 25% time to safety issues. There were safety rules and procedures in place that covered the work being performed by the victim. On the job, classroom and written safety manuals were used in safety training. It is unknown whether the victim, who had worked for the employer for 5 years and was doing at his usual job site at the time of the incident, had discussed safety prior to starting the days work or whether he was following standard operating procedures at the time of the incident.

INVESTIGATION:

At approximately 4:50 PM on September 15, 1992, the victim was electrocuted when he attempted to plug a roll machine into an energized extension cord. The same extension cord had been used earlier in the day on another machine without incident. The roll machine had also been used earlier in the day but had been plugged into a different extension cord.

The employee who had last used the roll machine inspected the male plug, noticed broken insulation but used it anyway and then unplugged it and reported the defective plug to the maintenance foreman. A work order to replace the plug was initiated but the machine was not tagged out of service. When the victim went to use the roll machine, he and his partner proceeded to use the machine with the defective plug having seen the machine used earlier in the day without incident. The workers located and used an energized extension cord with a damaged female receptacle. The combination of the two damaged plugs allowed the grounding conductor of the plug to be inserted into an energized phase conductor of the receptacle. When the worker attempted to connect the extension cord to the machine power cord, he fell to the ground unconscious. The rescue squad was called and transport was made to a local hospital where the victim was pronounced dead 1 hour following the incident.

CAUSE OF DEATH: Cardio-pulmonary arrest, electrocution caused by faulty electrical cord

Burns were found on the anterior chest area of the victim. There were three small burned areas on the anterior, superior left hand palm.

RECOMMENDATIONS/DISCUSSION:

Recommendation #1: Conduct a jobsite survey to identify potential hazards before beginning any job. Remove from service defective equipment. Lock and tag out equipment according to OSHA lockout and tagout requirements.

Discussion: In this instance, damaged electrical plugs were not permanently removed from service and machines were not locked and tagged out of service. Periodic inspections should be conducted for all electrical system equipment and components in order to identify all electrical hazards present. Records should be kept of any electrical hazards identified and corrective action should be taken immediately. Company policy should identify clearly who is responsible for corrective action and all supervisors should be clearly appraised of their responsibility to immediately enforce safety policies. Periodic safety inspections should be supplemented with daily inspections by the personnel using the equipment.

Recommendation #2: Train workers to recognize safety hazards in their workplace that pertain to their job assignments. In this instance, electrical hazard recognition.

Discussion: Policies that address the proper use of receptacles and connectors should be developed and implemented by qualified safety personnel. Safety training should emphasize awareness and recognition of

electrical hazards associated with receptacles and connectors (i.e. broken receptacles and connectors, improper electrical connections, damaged cords, the importance of grounding, etc.) Workers should be made aware that immediate corrective action is required when damaged components or safety hazards are encountered. company has instituted employee training to address recognition, identification of electrical hazards and the reporting of unsafe tools/machines/conditions. The training emphasized the need for workers to stop work immediately when defects are noted. Workers should be trained to use receptacles and connectors only in accordance with manufacturers' specifications. Physical abuse and stress on these components should be minimized by care in handling and in the use of stress/strain relief devices.

Recommendation #3: Replace current hubble plugs with ones having plastic or rubber housing.

Discussion: The company has replaced all hubble plugs with metal housing with plugs of having plastic or rubber housing.